

1     What is claimed is:

2         1. A method for manufacturing an adhesive substrate with a die-cavity sidewall,  
3             comprising:

4         providing a first substrate, the first substrate having a surface defining at least a region  
5             for forming the die-cavity sidewall;

6         laminating the first substrate with a sacrificial film, a partially cured resin being  
7             formed between the first substrate and the sacrificial film;

8         forming an aperture located corresponding to the region of the first substrate, the  
9             aperture passing through the first substrate, the partially cured resin and the  
10            sacrificial film in a manner that the first substrate has the die-cavity sidewall inside  
11            the aperture; and

12        removing the sacrificial film to expose the partially cured resin on the first substrate.

13        2. The method of claim 1, wherein the partially cured resin is cured from 5 to 50%.

14        3. The method of claim 1, wherein the partially cured resin has an uniform thickness.

15        4. The method of claim 1, wherein the partially cured resin is a prepreg.

16        5. The method of claim 1, wherein the partially cured resin is selected from one of the  
17            group of epoxy resin, BT(Bismaleimide Triazine) resin, or PI (Polyimide) resin.

18        6. The method of claim 1, wherein the partially cured resin contains metal particles.

19        7. The method of claim 1, wherein the sacrificial film is removed by peeling.

20        8. The method of claim 1, wherein the sacrificial film is removed by etching.

21        9. The method of claim 1, wherein the sacrificial film is a metal foil.

22        10. The method of claim 1, wherein the aperture is formed by punching.

23        11. The method of claim 1, wherein the aperture is formed by routing.

24        12. The method of claim 11, further comprising: forming a pre-cutting hole through the  
25            first substrate, the partially cured resin and the sacrificial film for routing the  
26            aperture.

27        13. The method of claim 12, wherein the pre-cutting hole is located at the corner of the

- 1 region of the first substrate.
- 2 14. The method of claim 1, wherein the first substrate is a stiffener.
- 3 15. The method of claim 14, wherein the first substrate is a metal plate.
- 4 16. The method of claim 1, further comprising: adhering the partially cured resin on  
5 the first substrate to a second substrate with a die-attached plane to form a die  
6 cavity.
- 7 17. A method for manufacturing a semiconductor device, comprising:  
8 providing a first substrate, the first substrate having a surface defining at least a region  
9 for forming a die-cavity sidewall;  
10 laminating the first substrate with a sacrificial film, a partially cured resin being  
11 formed between the first substrate and the sacrificial film;  
12 forming an aperture located corresponding to the region, the aperture passing through  
13 the substrate, the partially cured resin and the sacrificial film in a manner that the  
14 first substrate has a die-cavity sidewall inside the aperture;  
15 removing the sacrificial film to expose the partially cured resin on the substrate;  
16 adhering the partially cured resin on the first substrate to a second substrate with a  
17 die-attached plane to form a die cavity;  
18 attaching a semiconductor chip to the die-attached plane of the second substrate; and  
19 electrically connecting the semiconductor chip and the first substrate.
- 20 18. The method of claim 17, wherein the partially cured resin is cured from 5 to 50%.
- 21 19. The method of claim 17, wherein the partially cured resin has an uniform  
22 thickness.
- 23 20. The method of claim 17, wherein the partially cured resin is a prepreg.
- 24 21. The method of claim 17, wherein the partially cured resin is selected from one of  
25 the group of epoxy resin, BT (Bismaleimide Triazine) resin, or PI (Polyimide) resin.
- 26 22. The method of claim 17, wherein the partially cured resin contains metal particles.
- 27 23. The method of claim 17, wherein the sacrificial film is a metal foil.

- 1        24. The method of claim 17, wherein the sacrificial film is removed by peeling or  
2        etching.
- 3        25. The method of claim 17, wherein the first substrate is a cavity-down ball grid array  
4        substrate.
- 5        26. The method of claim 25, wherein the second substrate is a heat spreader.
- 6        27. The method of claim 17, further comprising: forming a package body inside the die  
7        cavity.
- 8        28. An adhesive substrate with a die-cavity sidewall, comprising:  
9        a first substrate, the first substrate having a surface defining at least a region for  
10       forming the die-cavity sidewall;  
11       a partially cured resin formed on the surface of the first substrate; and  
12       a die-cavity sidewall formed corresponding to the region of the first substrate by  
13       forming an aperture passing through the first substrate and the partially cured resin.
- 14       29. The substrate of claim 28, wherein the partially cured resin is cured from 5 to 50%.
- 15       30. The substrate of claim 28, wherein the partially cured resin is cured from 5 to 15%.
- 16       31. The substrate of claim 28, wherein the partially cured resin is laminated between  
17       the first substrate and a sacrificial film.
- 18       32. The substrate of claim 31, wherein the partially cured resin has an uniform  
19       thickness.
- 20       33. The substrate of claim 28, wherein the partially cured resin is a prepreg.
- 21       34. The substrate of claim 28, wherein the partially cured resin is selected from one of  
22       the group of epoxy resin, BT(Bismaleimide Triazine) resin, or PI (Polyimide) resin.
- 23       35. The substrate of claim 28, wherein the partially cured resin contains metal  
24       particles.
- 25       36. The substrate of claim 28, wherein the first substrate is a stiffener.
- 26       37. The substrate of claim 36, wherein the first substrate is a metal plate.
- 27       38. The substrate of claim 28, further comprising: a second substrate with a

1 die-attached plane, the partially cured resin on the first substrate adhering the  
2 second substrate to form a die cavity.

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